Cavanaugh Macdonald
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April 26, 2012

Mr. Alan Conroy
Executive Director
Kansas Public Employees Retirement System
611 South Kansas Avenue, Suite 100
Topeka, KS 66603

Re: Replacement Ratio Analysis for HB 2194, Sub SB 259-HCOW, Morris/Kelly Cash Balance Plan, King Hybrid Plan, and SB 429 Hybrid Plan

Dear Alan:

Cavanaugh Macdonald Consulting, LLC was asked to prepare an analysis of the percent of pre-retirement income replaced by different plan designs proposed for KPERS Tier 3 members. This type of comparison is referred to as a "replacement ratio" analysis. We performed such analysis for:

(1) HB 2194
(2) Sub SB 259-HCOW,
(3) Morris/Kelly Cash Balance Plan,
(4) King Hybrid Plan, and
(5) SB 429 (also a hybrid plan).

The replacement ratio analysis will vary depending on the portion and timing of an employee's career under KPERS-covered employment, so several different employment scenarios were modeled as described below. The retirement benefits provided under the various proposals are provided by both defined benefit (DB) plans and defined contribution (DC) plans. In order to compare benefits provided by both types of plans, it is necessary to convert the lump sum balance in the DC plan to monthly income or the monthly benefit in the DB plan to a lump sum. Since the focus of this comparison is the percent of pre-retirement income replaced in retirement, the projected account balance in the DC plan was converted to a monthly benefit using an investment return assumption and a mortality table. In all scenarios, the monthly benefits were assumed to commence at age 65. The employment patterns studied included:

(1) Early Career Service: hire at age 25, terminate employment at age 35 and retire at age 65
(2) Mid Career Service: hire at age 30, terminate employment at age 50 and retire at age 65
(3) Career Member: hire at age 35 and work until retirement at age 65
(4) Late Career Service: hire at age 45 and work until retirement at age 65.

3906 Raynor Pkwy, Suite 106, Bellevue, NE 68123
Phone (402) 905-4461 • Fax (402) 905-4464
www.CavMacConsulting.com
Offices in Englewood, CO • Kennesaw, GA • Bellevue, NE • Hilton Head Island,

There are many other combinations of age at hire and termination that could be modeled, but these four scenarios illustrate a range of possible employment patterns and should permit interested parties to discern the differences in the various plan designs. For employment scenarios where the employee is assumed to terminate employment prior to retiring at age 65, the replacement ratio is based on the salary the employee would have received if they had stayed in KPERS-covered employment until age 65 (salary projections for all scenarios are based on the salary increase assumption for School members). For the graphs showing dollar amounts of benefits rather than percentages, the salary **at retirement** was assumed to be $45,000.

Of the five plan designs included in our analysis, only HB 2194 is a traditional defined benefit plan where the benefit amount is based on final average salary, years of service, and the benefit multiplier. The alternate plan designs are either cash balance plans, defined contribution (DC) plans, or hybrid plans, composed of both a cash balance plan and a DC plan. Under both a cash balance plan and a DC plan, the employee's benefit is based on an "account balance". Cash balance plans and DC plans vary in how the account balance is determined, but they both provide benefits based on an account balance. This means the benefit accrual pattern of cash balance plans and DC plans is similar in that the benefit is based on the salary over the entire employment period (rather than the final average salary that is typical of traditional defined benefit plans). However, the four alternate plan designs vary with respect to the sharing of investment and longevity risk as well as the guaranteed nature of the benefits. These issues are discussed further in the following paragraphs. The cost of the various plan designs is also different, as well as their impact on KPERS' funding. These issues are discussed in the cost studies that were previously prepared and are not addressed in this letter.

Risk Sharing

One of the main concerns with the current plan design (traditional defined benefit plan) is that most, if not all, of the investment risk (both pre and post-retirement) as well as the longevity risk, is borne by the employer. That means, to the extent that actual experience differs from that assumed (positive or negative), the employer contribution rate is impacted. If actual experience is not as favorable as assumed, there is an increase in the employer contribution rate. Likewise, if actual experience is more favorable than assumed, there is a decrease in the employer contribution rate. This situation can create significant volatility in the employer contribution rate, thereby creating funding challenges. All of the proposed plan designs, other than HB 2194, share some or all of these risks with the employee, thereby reducing the risk for the employer and offsetting some, or all, of the cost increase related to unfavorable experience. A summary of the risk sharing provisions in each plan design is shown on the following page.

	Investment Risk		Longevity Risk
	Pre-retirement	Post-retirement	
HB 2194	*Borne by employer*	*Borne by employer*	*Borne by employer*
Sub SB 259			
Cash Balance	*Shared with employee.* Guaranteed interest crediting rate is 5%. If actual experience is higher, additional interest credits MAY be granted at the discretion of the KPERS Board. Legislature has the express power to change the guaranteed interest crediting rate prospectively, which reduces the employer risk.	*Borne by employer once member is retired.* 5% assumption is locked in for any retired member, but may be changed prospectively by the legislature at any time for members not yet retired. This feature reduces the post-retirement investment risk assumed by the employer compared to the current plan design.	*Borne by employer once member is retired* Mortality table may be changed prospectively by the KPERS Board at any time for members not yet retired, which reduces the longevity risk for the employer compared to the current plan design.
Defined Contribution	*Borne by employee*	*Borne by employee*	*Borne by employee*
Morris/Kelly	*Shared with employee* Guaranteed interest crediting rate is 6% for the first 20 years, 6.25% for the next 10 and then 6.50% thereafter. Based on actual experience and Plan's funded status, additional dividends of up to 4% MAY be granted at the discretion of the KPERS Board. Legislature has the express power to change the guaranteed interest crediting rate prospectively, which reduces the employer risk.	*Borne by employer once member is retired* 6% assumption is locked in for any retired member, but may be changed prospectively by the legislature at any time for members not yet retired. This feature reduces the post-retirement investment risk assumed by the employer compared to the current plan design.	*Borne by employer once member is retired* Mortality table may be changed prospectively by the KPERS Board at any time for members not yet retired, which reduces the longevity risk for the employer compared to the current plan design.

	Investment Risk		Longevity Risk
	Pre-retirement	Post-retirement	
King Hybrid Plan			
Cash Balance Plan	*Shared with employee.*	*Borne by employer once member is retired*	*Borne by employer once member is retired*
	Guaranteed interest credit of 6% for all years. Based on actual investment experience and Plan's funded status, additional dividends of up to 4% MAY be granted at the discretion of the KPERS Board. Legislature has the express power to change the guaranteed interest crediting rate prospectively, which reduces the employer risk.	6% assumption is locked in for any retired member, but may be changed prospectively by the legislature at any time for members not yet retired. This feature reduces the post-retirement investment risk assumed by the employer compared to the current plan design.	Mortality table may be changed prospectively by the KPERS Board at any time for members not yet retired, which reduces the longevity risk for the employer compared to the current plan design.
DC Plan	*Borne by employee*	*Borne by employee*	*Borne by employee*
SB 429 Hybrid Plan			
Cash Balance Plan	*Largely borne by employee*	*Shared with employee*	*Borne by employer once member is retired.*
	Actual investment returns on KPERS portfolio are granted – guaranteed return of 0% at the time of retirement. Plan design shifts nearly all of the pre-retirement investment risk to employees.	Post-retirement interest rate is variable based on Pension Benefit Guaranty Corporation's interest rates for distress terminations. There is no direct correlation to the investment earnings of the KPERS fund, so the impact of this provision on the plan's funding is unclear. Moreover, the variable interest rate is likely to introduce volatility in benefit levels.	Mortality table may be changed prospectively by the KPERS Board at any time, which reduces the longevity risk for the employer compared to the current plan design.
DC Plan	*Borne by employee*	*Borne by employee*	*Borne by employee*

Guaranteed Nature of the Benefit

As mentioned earlier, the five plan designs also vary with respect to the guaranteed nature of the benefit payable to a member, given their compensation history, years of service and retirement age. As might be expected, the traditional DB plan (HB 2194) provides the highest degree of certainty regarding the amount of the retirement benefit. This is also why it is the plan design that provides the least amount of risk sharing, i.e. the actual experience, positive or negative, impacts the employer contribution rate under HB 2194 while not affecting the benefit paid to the member. The other four plan designs provide a range of guarantees related to the benefit amount, with the Morris/Kelly Plan providing the greater guarantee and the DC plan option under Sub SB 259 HCOW providing no guaranteed benefit amount (only whatever is in the member's account balance). Under the King Hybrid and SB 429, the employee is covered by both a Cash Balance Plan (employer contributions) and a DC Plan (employee contributions). However, the King Hybrid provides a higher degree of certainty with respect to the benefit amount than SB 429, due to the way investment risk is shared. SB 429 places almost all of the pre-retirement investment risk in the Cash Balance Plan portion with employees while the King Hybrid design provides a guaranteed 6% pre-retirement interest credit in the Cash Balance portion of its plan design. The King Plan also sets the annuity conversion interest rate at 6%, while it is variable under SB 429. The following table further summarizes these risk sharing features.

Risk Feature	Sub SB 259 HCOW		Morris/Kelly	King Hybrid		SB 429 (Hybrid)	
	Cash Balance	DC Plan	Cash Balance	Cash Balance	DC Plan	Cash Balance	DC Plan
Guaranteed investment return: pre-retirement	5%	No	6%	6%	No	0%	No
Favorable investment experience shared	Yes, at Board's discretion, up to maximum of 2% each year	Yes*	Yes, at Board's discretion, up to maximum of 4% per year	Yes, at Board's discretion, up to maximum of 4% per year	Yes*	Actual investment experience, both positive and negative, is shared with employee.	Yes*
Guaranteed Monthly Income	Yes	No	Yes	Yes	No	Yes	No
Interest rate for annuitization	5%	NA	6%	6%	NA	Variable	NA
Mortality Table for annuitization	Table may be changed prospectively for future retirements	NA	Table may be changed prospectively for future retirements	Table may be changed prospectively for future retirements	NA	Table may be changed prospectively for future retirements	NA

*In a DC Plan, all investment experience, positive or negative, impacts the benefit amount.

Assumptions Used in the Replacement Ratio Analysis

As discussed earlier, in order to directly compare benefits provided by both DB and DC plans, it is necessary to either convert the lump sum balance in the DC plan to monthly income or to convert the monthly benefit in the DB plan to a lump sum. Since the focus of this comparison is the percent of pre-retirement income replaced by each plan design, the projected account balance in the DC plan was converted to a monthly benefit (called annuitization) using a mortality table and an investment return/interest rate assumption. For certain cash balance plans, the interest rate used to convert the account balance to a monthly benefit is part of the plan design. In other plans, particularly the DC plans, assumptions must be used for the post-retirement investment return/interest assumption. Each plan design included in the replacement ratio analysis is discussed separately below and the assumptions used to model the benefits are identified. Please note that for all plan designs, other than HB 2194, an assumption had to be used to anticipate the duration of payments, i.e. life expectancy. The RP 2000 Mortality Table projected to 2035 was used to calculate income replacement for all scenarios for the Cash Balance and Defined Contribution Plans.

Defined Contribution Plan Component of All Plan Designs

In a defined contribution plan, there is no guaranteed investment return either before or after retirement, and members direct their own investments. Because the investment return over the long term is heavily dependent on the member's asset allocation decisions, it seems reasonable to expect a broad distribution of investment returns, creating a wide spectrum of benefit amounts. The range of investment return scenarios that could be modeled is extensive and to do so would be overwhelming and of limited value. Instead, we have selected several investment return scenarios to include in our analysis that we believe illustrate the variable nature of the retirement benefits in certain plan designs. However, the selection does not reflect any opinion as to the likelihood that members would achieve any particular return assumption.

The following chart shows the various combinations of investment return assumptions used in our analysis.

DC Plan Investment Return Assumption	
Pre-retirement	Post-retirement
8%	6%
7%	5%
6%	4%
5%	3%

Due to the number of scenarios created when there is plan choice or a combination Cash Balance/DC Plan, not all assumption sets are used for all plan designs.

An 8% pre-retirement investment return assumption was used because one investment option for members will be to invest in a portfolio similar to KPERS. Therefore, we could expect them to earn close to the KPERS expected return of 8% over the member's pre-retirement period. However, cost study projections were also performed using a 7% assumed rate of return, so this scenario was considered a possible return scenario for the KPERS portfolio as well. Moreover, since employees will make investment decisions themselves, it is reasonable to expect employees to earn a range of returns in their pre-retirement years. Numerous studies have shown that DC plans where employees self-direct the

investment of their accounts earn returns that are about 1% less than the return earned by DB plans. As a result, we also modeled a 7% pre-retirement investment return assumption.

Studies also show that many employees invest conservatively or make poor decisions as to the timing of changes to their asset allocation (e.g. sell stocks when the market is down). One such survey showed that 33% of all participants in 401(k) plans had a 0% allocation to equities. As a result, the investment experience for individual employees may be significantly lower than the returns earned by the KPERS fund. To demonstrate the impact of more risk adverse behavior and ill-advised investment decisions on retirement benefits, we modeled both a 5% and 6% annual investment return. Actual investment experience could be lower or higher than the various rates of return shown in our analysis. The goal was to demonstrate the sensitivity of the replacement ratio results to the assumed investment returns and illustrate the potential range of outcomes.

Given that a retiree must live off their retirement assets, it is generally assumed that the retiree will need to either buy an annuity or, at a minimum, increase their asset allocation to more stable asset classes after retirement. The result of a more conservative asset allocation is a lower investment return post-retirement than was earned pre-retirement. Put another way, since the account value must be used to pay living expenses in retirement, we do not believe it is reasonable to assume the investment return earned before retirement can be earned after retirement. Consequently, we used a post-retirement investment return assumption that was 2% lower than the assumed pre-retirement investment return assumption in the various DC Plan scenarios.

Sub SB 259 - HCOW

Cash Balance Plan

This plan design provides employees with a choice to participate in a Cash Balance Plan or a pure Defined Contribution Plan. Due the different nature of these plans, different assumptions are needed to project the retirement benefits they provide. The Cash Balance Plan provides for a guaranteed interest crediting rate of 5%. However, it also allows the KPERS Board of Trustees to make additional interest credits if actual returns are favorable, which introduces variability to the amount of benefit provided. The guaranteed interest rate of 5% creates a minimum benefit. We modeled the replacement ratio using a 6.0% and 6.5% total interest credits for all years along with the 5% guaranteed rate to demonstrate the potential variability of the benefits payable from the Cash Balance Plan. These were the assumed interest crediting rates for the cost studies for Sub SB 259 – HCOW that were prepared using a 7% and 8% investment return assumption.

The plan sets the interest rate used to annuitize the account balance at 5%, so an assumption for the post-retirement investment return is not needed. However, the KPERS Board has the authority to select an appropriate mortality table, and therefore, a mortality assumption has to be made in order to calculate a monthly benefit. As mentioned above, the RP 2000 Mortality Table with mortality improvements projected to 2035 was used to estimate the monthly benefits payable at retirement.

The following chart shows the combinations modeled for the Cash Balance Plan:

Cash Balance Plan	
Pre-retirement Interest Crediting Rate	Annuitization Interest Rate
5.0%	5.0%
6.0%	5.0%
6.5%	5.0%

Defined Contribution Plan

See earlier discussion regarding assumptions used for the benefits provided by the DC Plan.

Morris/Kelly Plan

The Morris/Kelly Plan is similar to the Cash Balance Plan provided in Sub SB 259-HCOW, except the guaranteed pre-retirement interest crediting rate is 6% for the first twenty years, 6.25% for the next ten years and 6.50% thereafter. Furthermore, the post-retirement interest rate to convert the cash balance account to monthly income (annuitize) is 6% compared to 5% in Sub SB 259-HCOW. The use of a higher interest crediting rate results in a higher guaranteed account balance at retirement. The 6% interest rate for postretirement conversion to monthly income also provides a higher benefit amount than a 5% interest rate. As a result, the Morris/Kelly Plan provides for a higher guaranteed benefit than the Cash Balance Plan in Sub SB 259-HCOW. Because both the King Plan and SB 429 are a combination of a Cash Balance Plan for employer contributions and DC Plans for employee contributions, the Morris/Kelly Plan provides a higher degree of certainty regarding the benefit amount than either of those plan designs.

The Morris/Kelly Plan gives the KPERS Board of Trustees the authority to grant additional dividends to members with at least ten years of service, depending on actual investment experience, the plan's funding and other relevant factors. While this provision means the ultimate benefit payable from the Plan may be higher than the guaranteed amount, it introduces a variable nature to the benefit amount and requires the use of an assumption to project the benefits. In order to illustrate the variable nature of the benefit, two examples of a total interest crediting rate (including dividends) were modeled – (1) 6% for the first ten years and 8% thereafter; and (2) 6% for the first ten years and 7% thereafter. These scenarios are in addition to the guaranteed rates of 6% for twenty years, 6.25% for the next ten years and 6.50% thereafter. The chart below summarizes the various combinations included in the replacement ratio analysis:

Cash Balance Plan	
Pre-retirement Interest Crediting Rate	Annuitization Interest Rate
First 20 years: 6.0% Years 20-30: 6.25% Years 30+: 6.50%	6.0%
First 10 years: 6.0% Years 10+: 8.0%	6.0%
First 10 years: 6.0% Years 10+: 7.0%	6.0%

King Plan: Hybrid Cash Balance and DC Plan

This plan design provides that all employees participate in both a Cash Balance Plan (funded by employer contributions) and a pure DC Plan (funded by employee contributions). The Cash Balance Plan design is the same as the Morris/Kelly Plan with one exception. The guaranteed interest crediting rate is a flat 6.0%. Like the Morris/Kelly Plan, it gives the KPERS Board of Trustees the authority to grant additional dividends to members with at least ten years of service, depending on actual investment experience, the plan's funded status and other relevant factors. As with the replacement ratios for the Morris/Kelly Plan, several additional scenarios were modeled to attempt to illustrate the variability of the benefits provided by the King Plan. A summary of the assumptions used to project benefits from the Cash Balance Plan are shown in the table below:

Cash Balance Plan	
Pre-retirement Interest Crediting Rate	Annuitization Interest Rate
6.0%	6.0%
First 10 years: 6.0% Years 10+: 8.0%	6.0%
First 10 years: 6.0% Years 10+: 7.0%	6.0%

Defined Contribution Plan

See earlier discussion regarding assumptions used for the benefits provided by the DC Plan portion of the King Plan.

SB 429: Hybrid Cash Balance and DC Plan

Cash Balance Plan

While this plan design includes a Cash Balance Plan component, its design is very different from the other Cash Balance Plans discussed in this letter. The key difference is that the guaranteed pre-retirement interest rate is 0%, because the plan is designed to share the actual returns of the KPERS portfolio, both positive and negative, with employees. Essentially, the cash balance account would look the same as a DC plan with all investments in the KPERS DB portfolio. The only guarantee is that the account balance at retirement will not be less than the sum of all contributions to the account. From a practical standpoint, all of the pre-retirement investment risk has been transferred to the employee.

This Cash Balance Plan is also very different from the other Cash Balance Plans included in this comparison because the interest rate used to convert the account balance into monthly income is not set by the plan. Instead, it is tied to the interest rate used by the Pension Benefit Guaranty Corporation (PBGC) for distress plan terminations. These rates are published monthly by the PBGC and, therefore, will vary over time. Due to the fact both the pre-retirement interest rate and the post-retirement interest rate are unknown, a significant amount of uncertainty exists with respect to the amount of benefit that will be provided by this plan design. To demonstrate this, several different scenarios were modeled for the Cash Balance component of this plan design, as shown in the following table:

Cash Balance Plan	
Pre-retirement Interest Credit Rate	Annuitization Rate
8.0%	6.5%
8.0%	4.5%
7.0%	6.0%
7.0%	4.0%

Because the actual investment return earned by the KPERS fund will be credited to the cash balance account, the actuarial assumption of 8% was modeled, as well as a 7.0% return (since several alternate cost studies have been prepared using a 7.0% investment return assumption).

Under the 8% pre-retirement interest crediting rate, a 6.5% annuitization rate was selected because it was the assumption used in the cost study for SB 429. The interest rate used to convert the cash balance account into monthly income is variable under SB 429. To illustrate the impact of a different annuitization rate, a lower annuitization rate of 4.5% was also selected. The cost study in which the KPERS investment return assumption was assumed to be 7.0% used an annuitization rate of 6.0%. Therefore, we paired the same 6.0% assumption with a 7.0% pre-retirement interest crediting rate for one of the scenarios, and for the second scenario, we lowered the annuitization rate to 4.0%.

Defined Contribution Plan

See earlier discussion regarding assumptions used for the benefits provided by the DC Plan portion of SB 429.

We, Patrice A. Beckham, FSA and Brent A. Banister, FSA, are consulting actuaries with Cavanaugh Macdonald Consulting, LLC. We are members of the American Academy of Actuaries, Fellows of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

If you have any questions or additional information is needed, please let us know. We are available to provide additional analysis or explanation.

Sincerely,

Patrice Beckham

Patrice A. Beckham, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

Brent A. Banister

Brent A. Banister, PhD, FSA, EA, FCA, MAAA
Chief Pension Actuary

Comparison of Tier 3 Plan Designs

Assumptions Used in Determining Replacement Ratios:

Sub SB 259, As Amended by House Committee of the Whole:
Cash Balance/Defined Contribution Election

	Cash Balance Plan		Defined Contribution Plan	
	Pre-retirement Interest Credit Rate	Annuitization Rate	Pre-retirement Returns	Post-Retirement Returns
Scenario 1	5.0%	5.0%		
Scenario 2	6.5%	5.0%		
Scenario 3	6.0%	5.0%		
Scenario 4			8.0%	6.0%
Scenario 5			7.0%	5.0%
Scenario 6			6.0%	4.0%

Morris/Kelly: Cash Balance Plan

	Cash Balance Plan	
	Pre-retirement Interest Credit Rate	Annuitization Rate
Scenario 1	First 20 years: 6.0% Years 20-30: 6.25% Years 30+: 6.50%	6.0%
Scenario 2	First 10 years: 6.0% Years 10:+ 8.0%	6.0%
Scenario 3	First 10 years: 6.0% Years 10:+ 7.0%	6.0%

The School salary scale was used to project future salary increases to age 65 in all calculations.

Comparison of Tier 3 Plan Designs

Assumptions Used in Determining Replacement Ratios:

King: Hybrid Cash Balance/Defined Contribution Plan

	Cash Balance Component		Defined Contribution Component	
	Pre-retirement Interest Credit Rate	Annuitization Rate	Pre-retirement Returns	Post-Retirement Returns
Scenario 1	6.0%	6.0%	8.0%	6.0%
Scenario 2	6.0%	6.0%	6.0%	4.0%
Scenario 3	First 10 years: 6.0% Years 10+: 8.0%	6.0%	8.0%	6.0%
Scenario 4	First 10 years: 6.0% Years 10+: 8.0%	6.0%	6.0%	4.0%
Scenario 5	First 10 years: 6.0% Years 10+: 7.0%	6.0%	7.0%	5.0%
Scenario 6	First 10 years: 6.0% Years 10+: 7.0%	6.0%	6.0%	4.0%

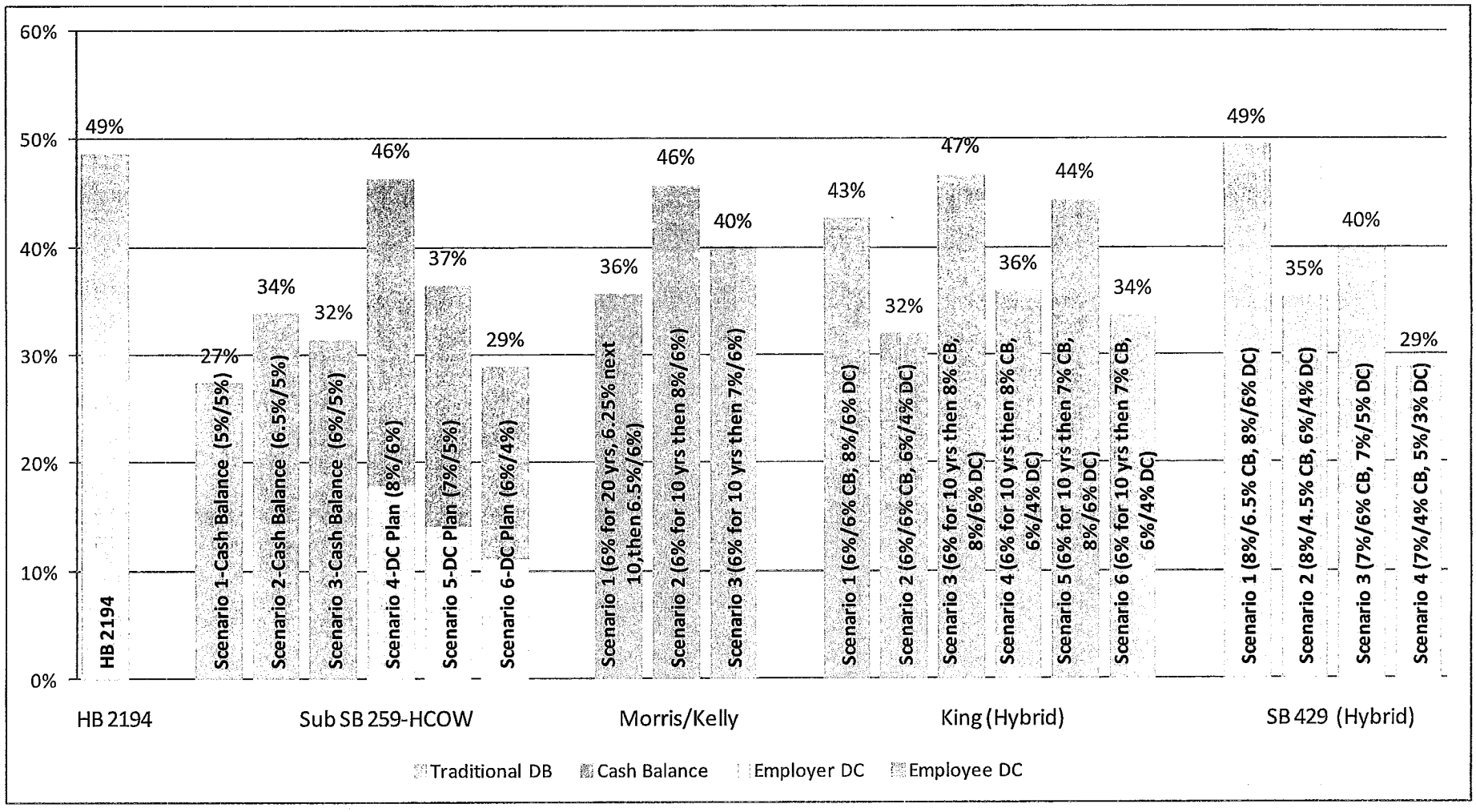
SB 429: Hybrid Cash Balance/Defined Contribution Plan

	Cash Balance Component		Defined Contribution Component	
	Pre-retirement Interest Credit Rate	Annuitization Rate	Pre-retirement Returns	Post-Retirement Returns
Scenario 1	8.0%	6.5%	8.0%	6.0%
Scenario 2	8.0%	4.5%	6.0%	4.0%
Scenario 3	7.0%	6.0%	7.0%	5.0%
Scenario 4	7.0%	4.0%	5.0%	3.0%

The School salary scale was used to project future salary increases to age 65 in all calculations.

Comparison of Tier 3 Plan Designs

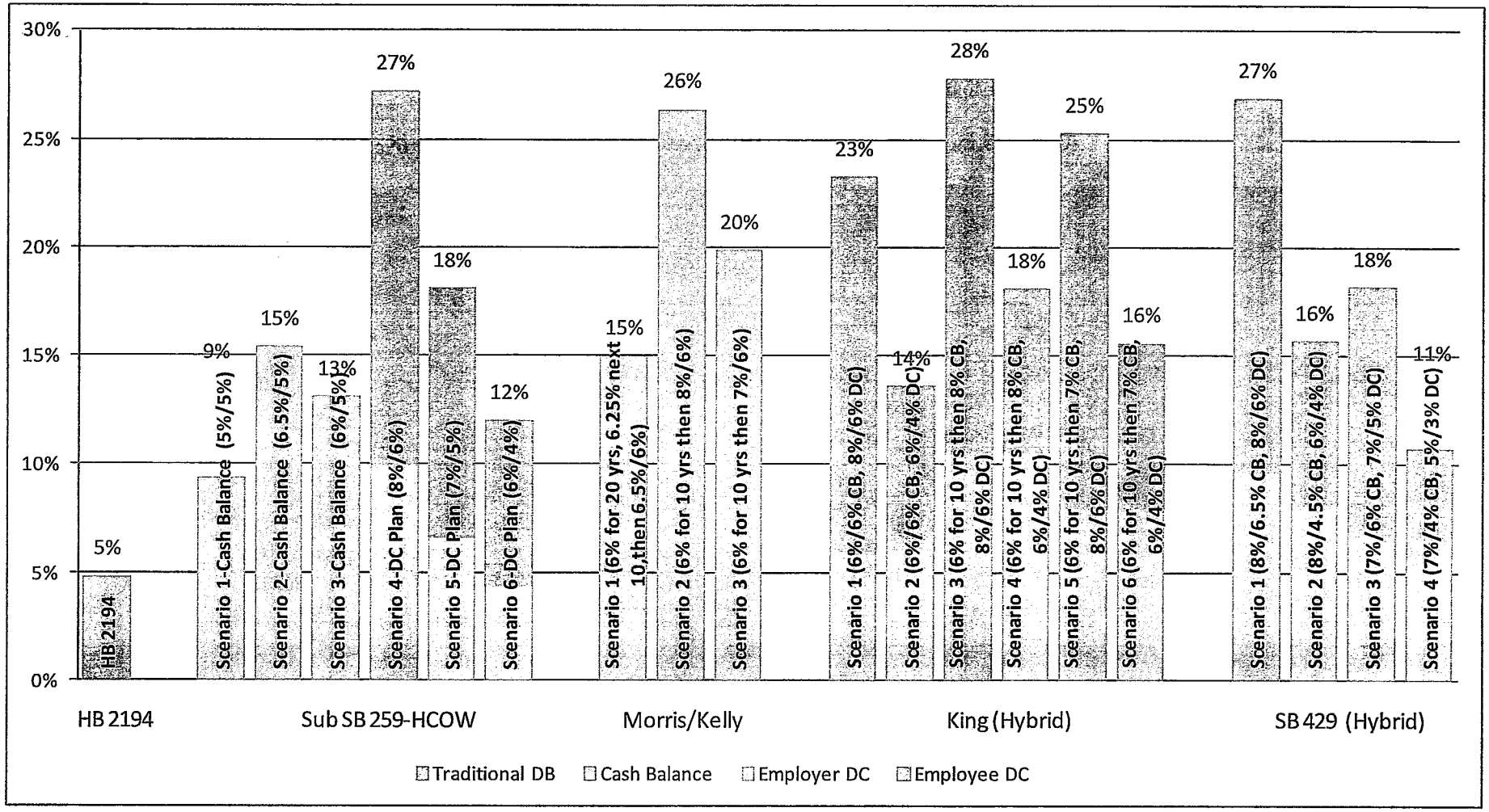
"Career Member" - Work from age 35 to age 65



First rate shown is the interest crediting rate for the Cash Balance Plan and the assumed pre-retirement investment return for the DC Plan.
Second rate shown is the annuity rate for the Cash Balance Plan and the assumed post-retirement investment return for DC Plan.
Annuity rate is set by plan design at 5% in Sub SB 259 and 6% for both Morris/Kelly and King plans. The annuity rate is variable under SB 429.
SEE ATTACHED SUMMARY PAGE FOR MORE DETAILS ON ASSUMPTIONS USED TO PRODUCE THESE GRAPHS.

Comparison of Tier 3 Plan Designs

"Early Career Service Member" - Work from age 25 to age 35



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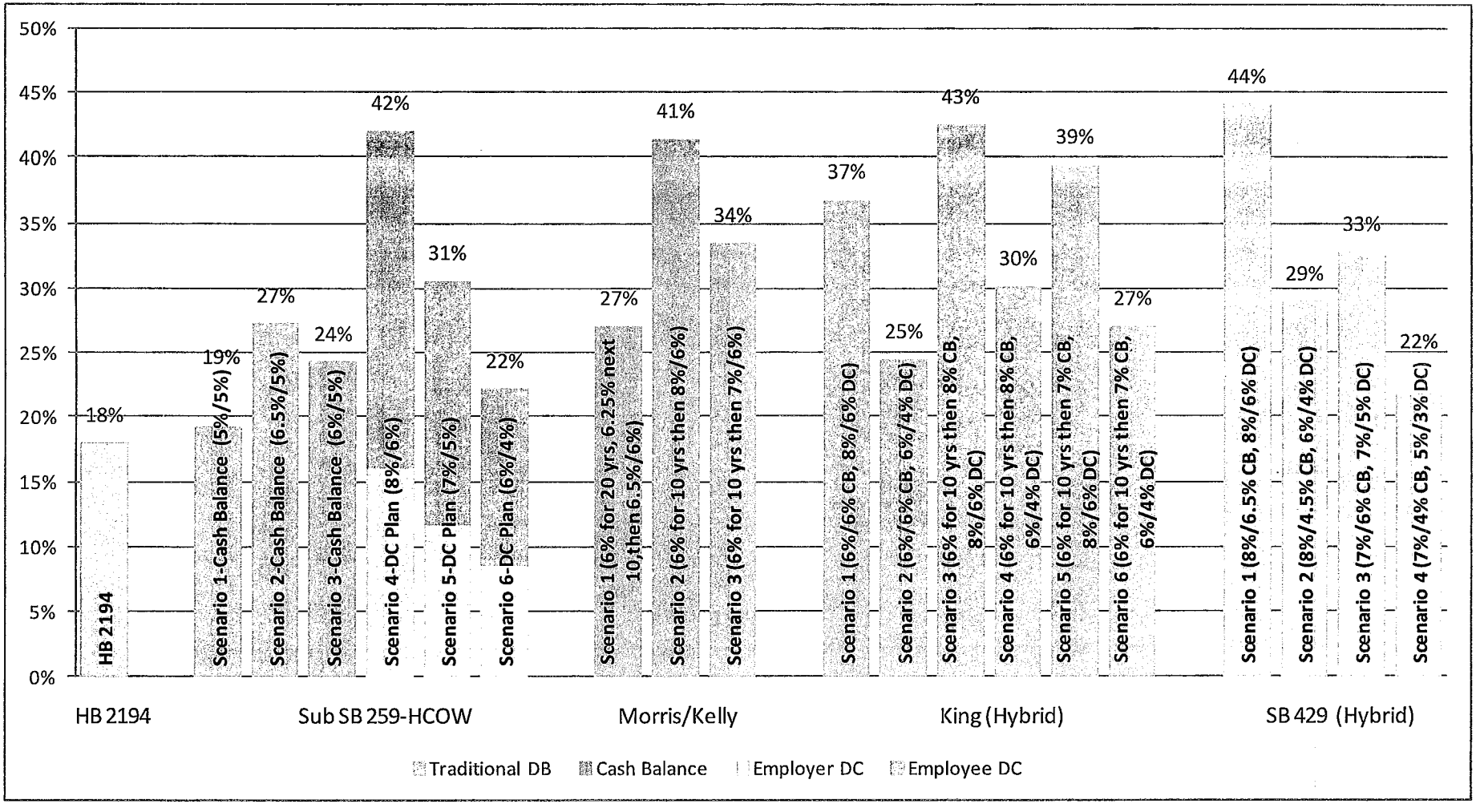
Comparison of Tier 3 Plan Designs

"Mid-Career Service Member" - Work from age 30 to age 50



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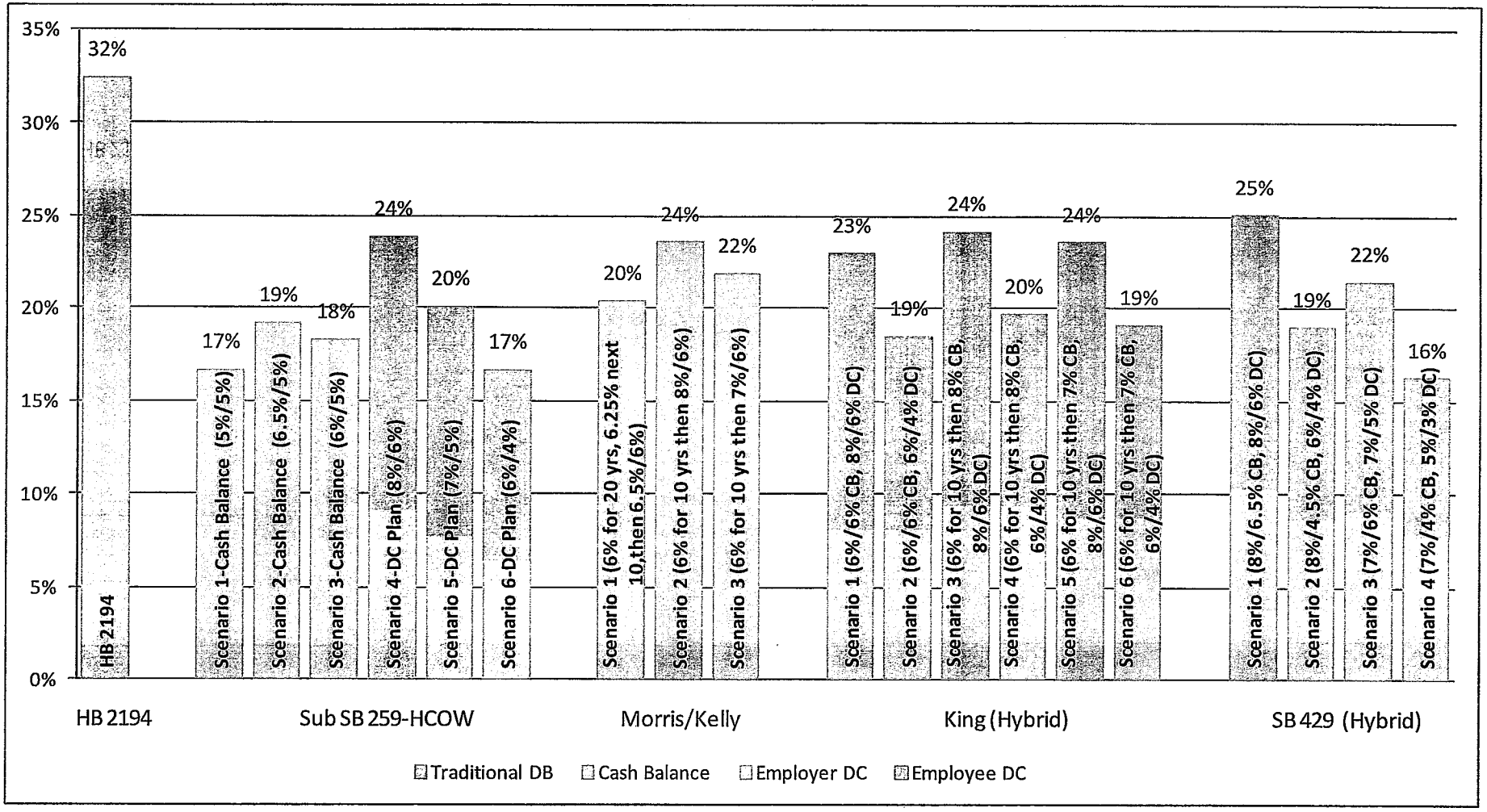
Comparison of Tier 3 Plan Designs

"Late Career Service Member" - Work from age 45 to age 65



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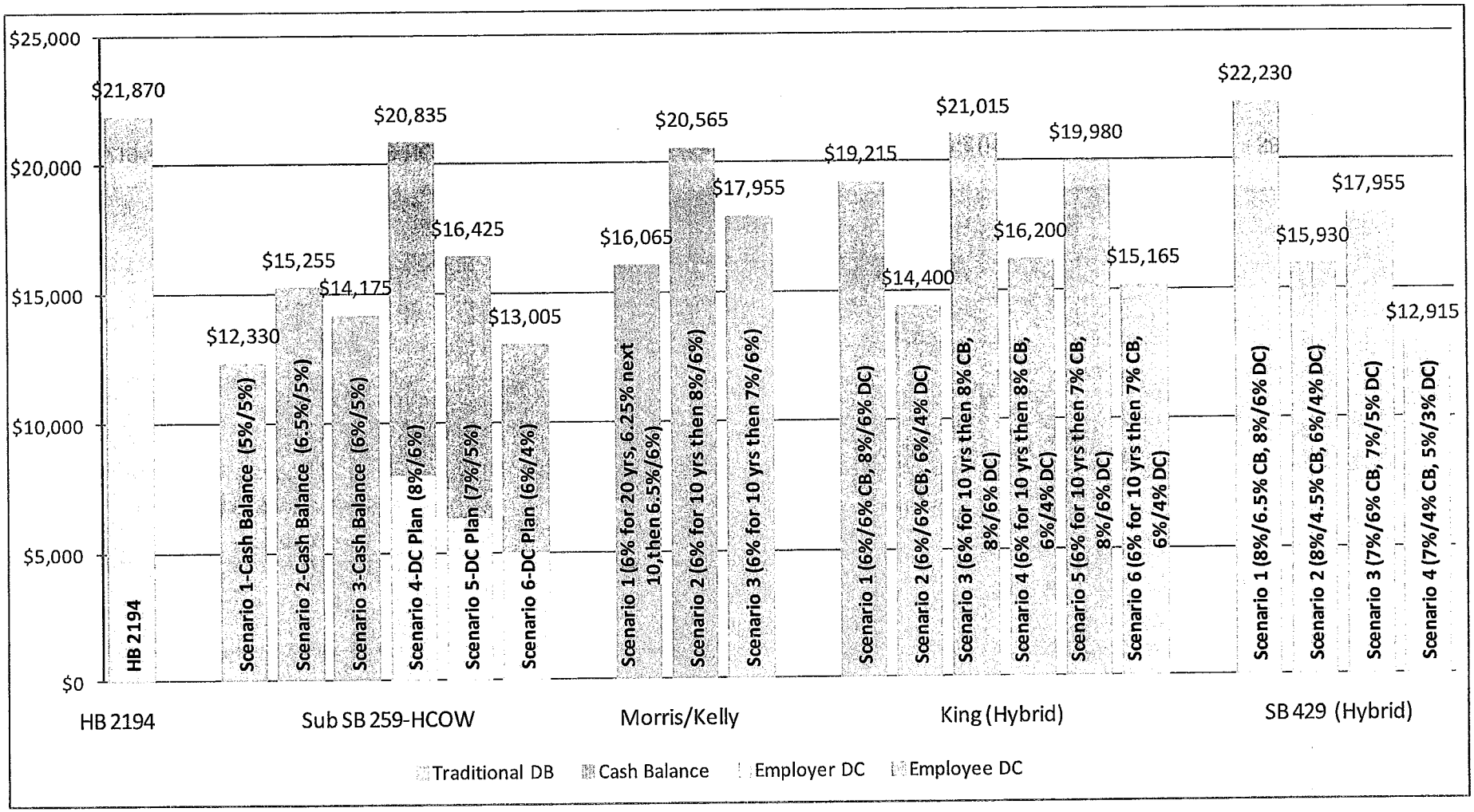
Comparison of Tier 3 Plan Designs

"Career Member" - Work from age 35 to age 65



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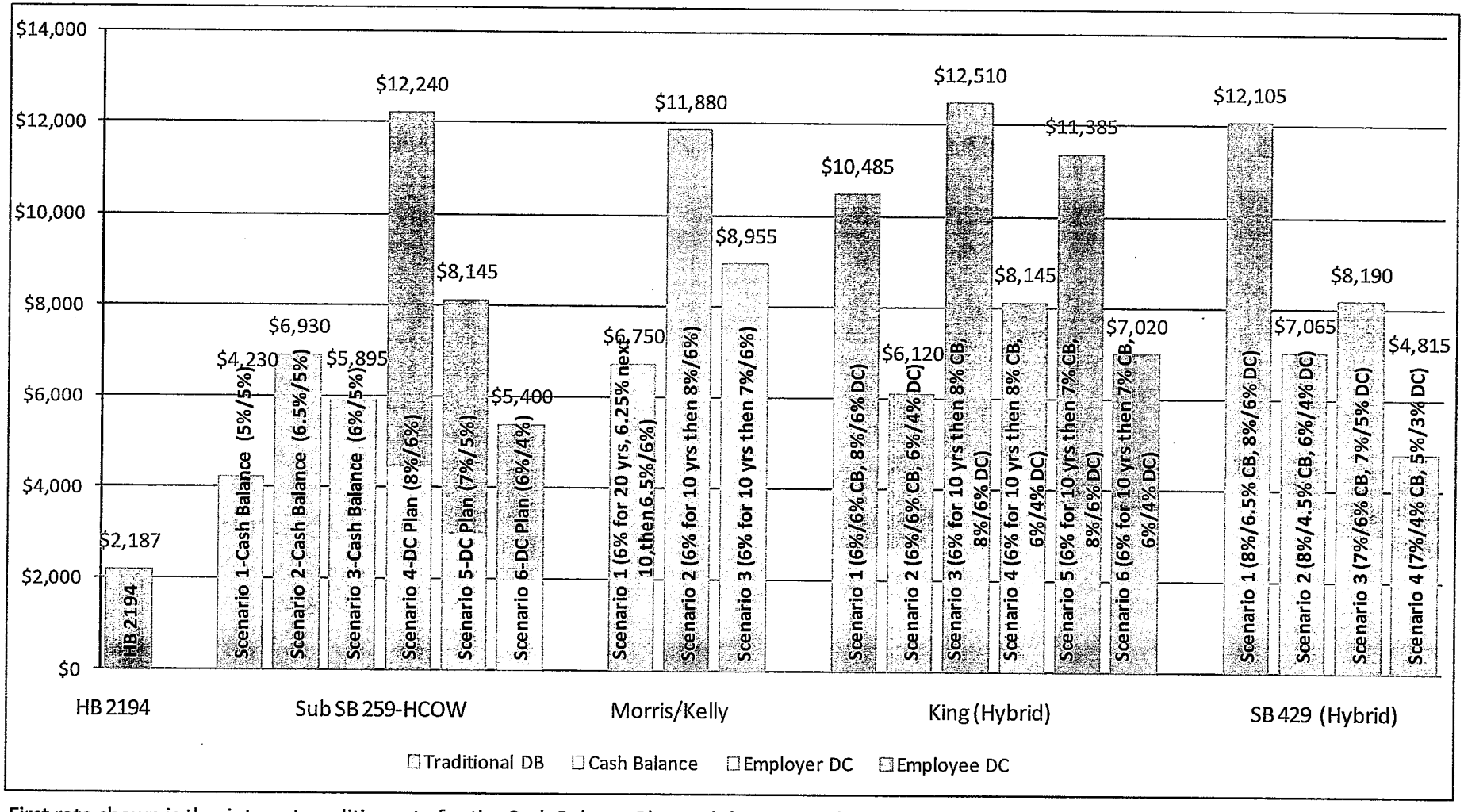
Comparison of Tier 3 Plan Designs

"Early Career Service Member" - Work from age 25 to age 35



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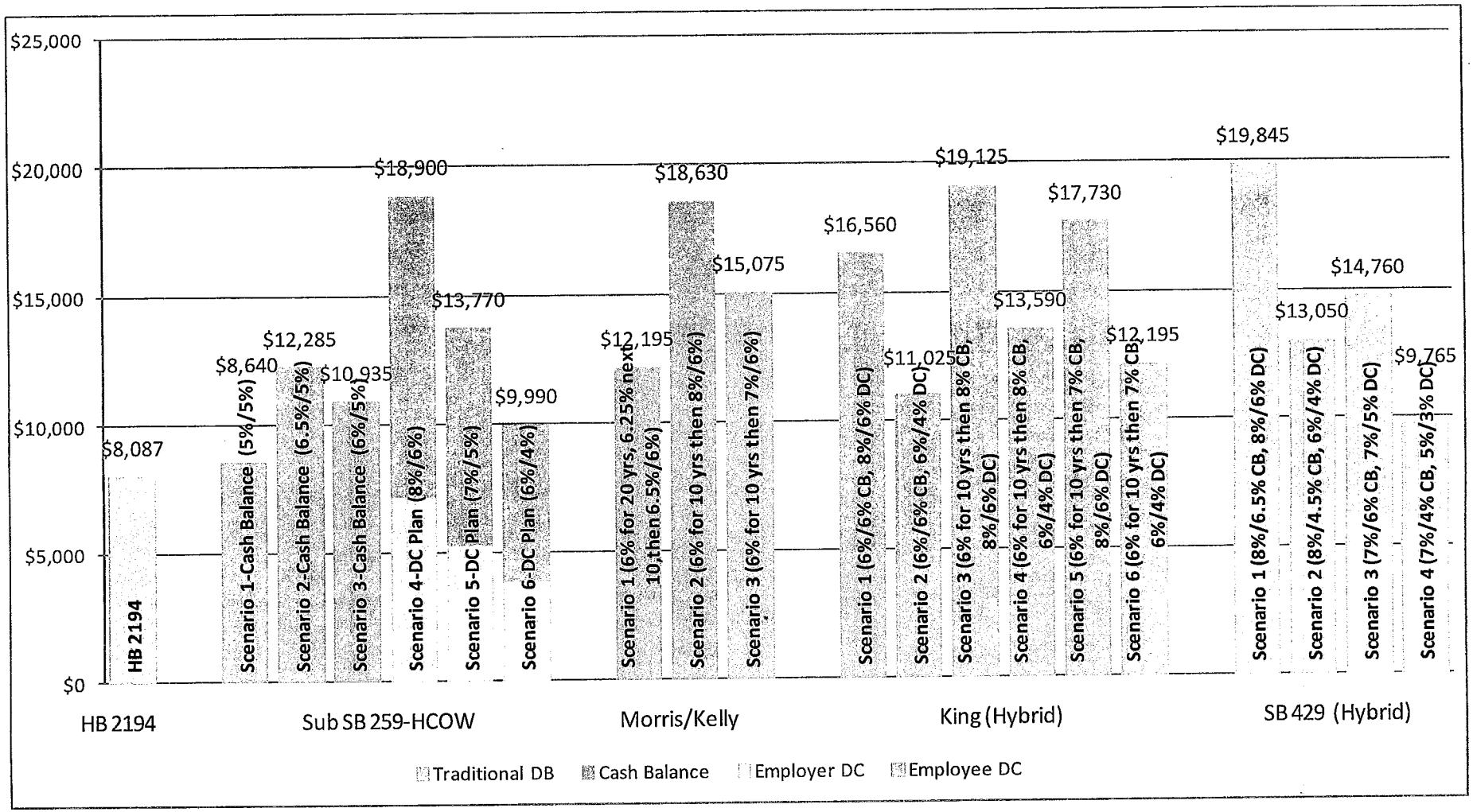
Comparison of Tier 3 Plan Designs

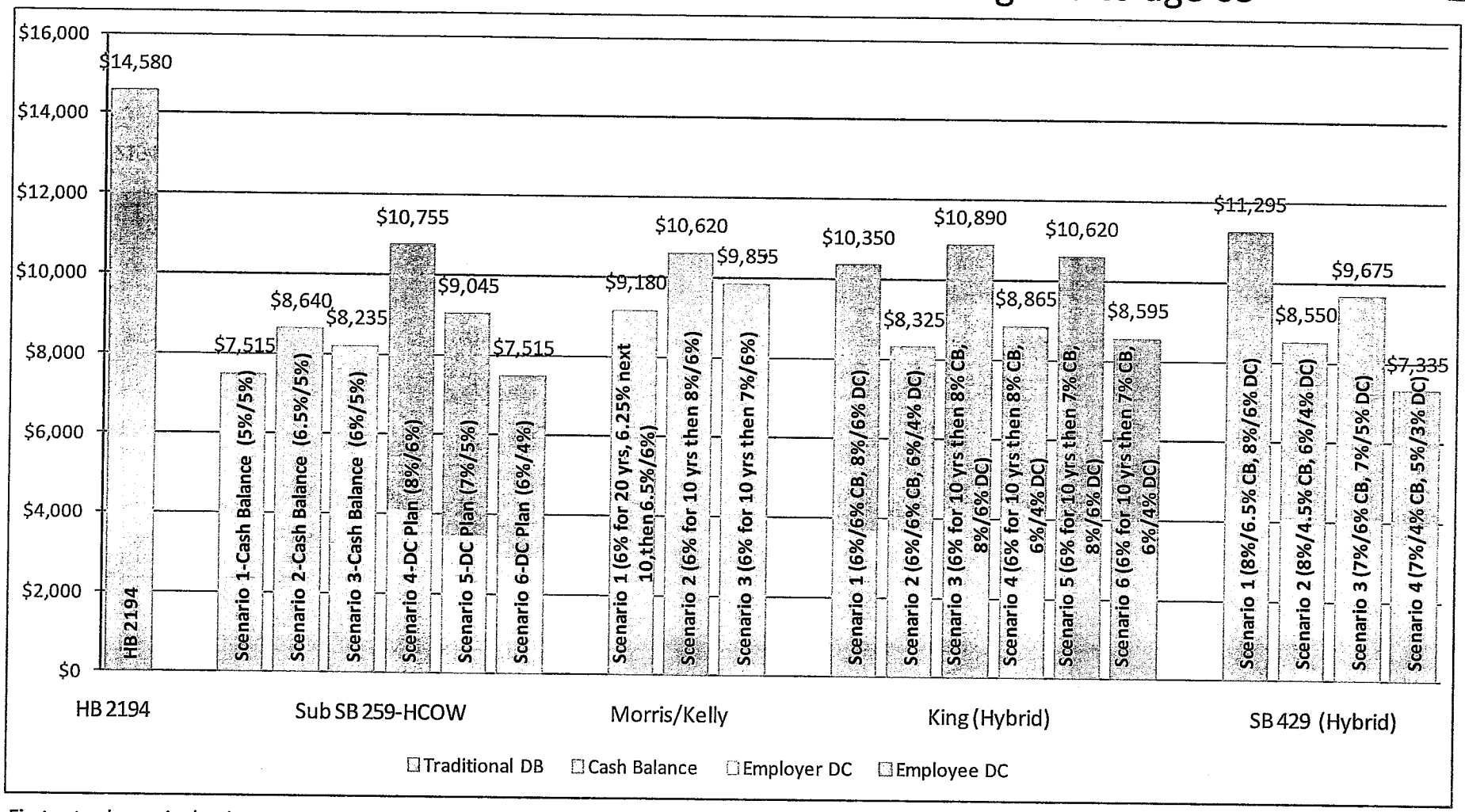
"Mid-Career Service Member" - Work from age 30 to age 50



First rate shown is the interest crediting rate for the Cash Balance Plan and the assumed pre-retirement investment return for the DC Plan.
Second rate shown is the annuity rate for the Cash Balance Plan and the assumed post-retirement investment return for DC Plan.
Annuity rate is set by plan design at 5% in Sub SB 259 and 6% for both Morris/Kelly and King plans. The annuity rate is variable under SB 429.
SEE ATTACHED SUMMARY PAGE FOR MORE DETAILS ON ASSUMPTIONS USED TO PRODUCE THESE GRAPHS.

Comparison of Tier 3 Plan Designs

"Late Career Service Member" - Work from age 45 to age 65



First rate shown is the interest crediting rate for the Cash Balance Plan and the assumed pre-retirement investment return for the DC Plan.
Second rate shown is the annuity rate for the Cash Balance Plan and the assumed post-retirement investment return for DC Plan.
Annuity rate is set by plan design at 5% in Sub SB 259 and 6% for both Morris/Kelly and King plans. The annuity rate is variable under SB 429.
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